

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch

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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:**Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-026213**Date Inspected:** 29-Aug-2011**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1730**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site

<b>CWI Name:</b>	John Pagliero and Steve Mc Connell			<b>CWI Present:</b>	<b>Yes</b>	<b>No</b>
<b>Inspected CWI report:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Rod Oven in Use:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>
<b>Electrode to specification:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Weld Procedures Followed:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>
<b>Qualified Welders:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Verified Joint Fit-up:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>
<b>Approved Drawings:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Approved WPS:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>
				<b>Delayed / Cancelled:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>
<b>Bridge No:</b>	34-0006			<b>Component:</b>	SAS Tower	

**Summary of Items Observed:**

Caltrans Office of Structural Material (OSM) Quality Assurance Inspector (QAI) Joselito Lizardo was present at the Self Anchored Suspension (SAS) job site as requested to perform observations on the welding of components for the San Francisco Oakland Bay Bridge (SFOBB) Project.

At Tower Base Elevation Electro Slag Welding (ESW) T-joint E-041 location 'R', QA randomly ABF welder Richard Garcia continuing to perform 3G SMAW first time welding repair (R1) on the visually (VT) detected defect on the surface of the vertical weld of the ESW. The welder was observed welding in the 3G (vertical) position utilizing Shielded Metal Arc Welding (SMAW) with 1/8" diameter E7018H4R electrode implementing welding procedure ABF-WPS-D15-1000-Repair Rev. 2. The boat shape repair excavation located at Y=2325mm to Y=2800mm was excavated to dimensions of 475mm long x 75mm wide x 40mm deep. The excavation was previously tested using Magnetic Particle Testing (MT) by ABF QC Steve Mc Connell and this QA with positive result. The repair excavation and the adjacent base metal was preheated and maintained to more than 204°C (400°F) using Miller Proheat Induction Heating System with the heater blankets placed at the other side of the repair. During the shift, ABF QC John Pagliero was noted monitoring the welder. Measured welding parameter during welding was 135 amperes on a 1/8" diameter E7018H4R electrode. At the end of the shift, repair welding was completed. The welder has programmed the Miller Proheat 35 Induction Heating System to hold the preheat of 400°F for three hours and cool down at 150°F per hour as recommended by ABF.

At Tower Base Elevation Electro Slag Welding (ESW) T-joint N-041 location 'N', QA randomly observe ABF welder Jeremy Dolman excavate two Ultrasonic Testing (UT) detected defects on the welded ESW. The welder was using carbon air gouging to excavate the defects with 121°C (250°F) preheat prior excavation. The (UT)

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defect at Y=3020mm was noted with approximately 50mm long of lack of fusion while the other (UT) defect at Y=3220mm was noted with slag inclusions. Both defects were excavated to a boat shape profile with dimensions 200mm long x 45mm wide x 40mm deep and 200mm long x 45mm wide x 28mm deep respectively. After the completion of the excavation, ABF QC John Pagliero performed Magnetic Particle Testing (MT). QC has found the two (2) excavations' defects removal satisfactory. This QA verified the same excavations with similar results.

During the routine visit of Caltrans Engineer Saman Soheili at the site, he noted the excavation was completed and the testing performed by ABF QC and QA satisfactory. He later informed this QA that he is verbally approving the repair of the two excavations mentioned above pending submission of the Request for Weld Repair (RWR) by ABF to Caltrans.

At Tower Base Elevation Electro Slag Welding (ESW) T-joint N-041 location 'N', QA randomly ABF welder Jeremy Dolman perform 3G SMAW first time welding repair (R1) on the Ultrasonic Testing (UT) detected defect on the vertical weld of the ESW. The welder was observed welding in the 3G (vertical) position utilizing Shielded Metal Arc Welding (SMAW) with 1/8" diameter E7018H4R electrode implementing welding procedure ABF-WPS-D15-1000-Repair Rev. 2. The boat shape repairs located at Y=3020mm was excavated to dimensions of 200mm long x 45mm wide x 40mm deep and at Y=3220mm with excavation dimensions of 200mm long x 45mm wide x 28mm deep. The excavations were tested using Magnetic Particle Testing (MT) by ABF QC John Pagliero and this QA with positive result. The repair excavation and the adjacent base metal was preheated and maintained to more than 204°C (400°F) using Miller Proheat Induction Heating System with the heater blankets placed at the other side of the repair area. During the shift, ABF QC John Pagliero was noted monitoring the welder. Measured welding parameter during welding was 110 amperes on a 1/8" diameter E7018H4R electrode. At the end of the shift, repair welding on the two excavations was still continuing and should remain tomorrow. The welder has programmed the Miller Proheat 35 Induction Heating System to hold the preheat of 204°C (400°F) for three hours and cool down at 150°F per hour as recommended by ABF.

Other related activities include initial Visual Test (VT) and MT by ABF QC on weld cover of various ESW locations (i.e. 'E', 'F', 'J' and 'K'). It was noted later during the shift that QC has marked a lot of grinding/fixing to be done on the covers due to various surface deficiencies like overlap, undercut and unacceptable cover profile. Grinding of the weld cover as marked by QC is now underway.

At ESW locations 'T', 'V' and 'L', ABF welder was noted carbon air arc gouging the bottom weld access hole after the sump block removal. The weld access holes were previously cut using the thermal lance cutting but they were so rough and not cut to 100mm radius as required. The completely gouged weld access holes were also ground smooth by Jeff Souza.

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At Tower Base Electro Slag Welding (ESW) T-joint #N-041 location 'N', ABF QC John Pagliero was observed performing Magnetic Particle Testing (MT) on the excavated (UT detected) defect removal.



08-29-2011 1111 Hours Self Anchored Suspension Bridge

At Tower Base Electro Slag Welding (ESW) T-joint #N-041 location 'N', a lack of fusion of approximately 50mm defect was noted during the excavation of the Ultrasonic Testing (UT) detected defect.



08-29-2011 0933 Hours Self Anchored Suspension Bridge



At Tower Base Electro Slag Welding (ESW) butt joint #W-043 location 'V', ABF welder Rory Hogan was noted carbon arc gouging the radius of the weld access hole (cut sump block) to 100mm radius as required.

08-29-2011 0928 Hours Self Anchored Suspension Bridge



08-29-2011 1320 Hours Self Anchored Suspension Bridge

## Summary of Conversations:

During the routine visit of Caltrans Engineer Saman Soheili at the site, he noted the excavation at ESW location 'N' was completed and the testing performed by ABF QC and QA satisfactory. He later informed this QA that he is verbally approving the welding repair of the two excavations mentioned above pending submission of the Request for Weld Repair (RWR) by ABF to Caltrans.

## Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact SMR Nina Choy 510-385-5910, who represents the Office of Structural Materials for your project.

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**Inspected By:** Lizardo, Joselito

Quality Assurance Inspector

**Reviewed By:** Levell, Bill

QA Reviewer

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